

**REMARKS**

Claim 1 has been amended to make clear that the eddy currents outside the outer coil are calculated.

This Amendment is based upon Figure 2 and page 20, lines 1 to 4 of the original specification.

The Examiner has rejected claims 1, 4, 6, 7, 10, and 12 under 35 U.S.C. § 102(b) as anticipated by Morich U.S. Patent No. 5,296,810.

Reconsideration of claim 1 as amended and the dependent claims is respectfully requested.

Morich's gradient coils are composed of an inner coil and an outer coil. However, Eq. 28 pointed out by the Examiner at paragraph 10 of the Office Action is an equation which calculates the magnetic field distribution generated at the inside of the outer coil. This fact is obvious from the following four viewpoints:

(i) Eq. 28 pointed out by the Examiner is obtained from the differentiation of Eq. 26.

(ii) The words "at the origin" at column 12, line 6 of Morich mean that the magnetic field  $B_z$  calculated according to Eq. 26 is formed around the center of the inner coil.

(iii) Eq. 26 assumes the outer coil as "a superconducting cylindrical surface" at column 11, line 60, and is argued from the premise of no leaking magnetic field to the outside of the outer coil because of the Meissner effect.

(iv) Eq. 26 includes the term " $K'_0(ka)I_0(k\rho)$ ", and this corresponds to the term " $K_m'(ka)I_m(kr)$ " of Eq. 14a of our cited reference; namely, P. Mansfield and B. Chapman, "Multishield Active Magnetic Screening of Coil Structures in NMR", *Journal of Magnetic Resonance* 72, pp. 211-223 (1987). If Eq. 26 is the equation calculating magnetic

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field at the outside ( $r > a$ ) of the outer coil, the term " $K'_0(ka)I_0(k\rho)$ " must be " $I'_0(ka)K_0(k\rho)$ " based on Eq. 14b of the Mansfield et al. reference.

Therefore, we can conclude that Morich does not disclose the calculation step of eddy currents at the outside of the outer coil.

On the other hand, Applicant discloses and claims the step of calculating eddy current at the outside of the outer coil.

The Examiner has rejected claims 2, 3, 5, 8, 9, and 11 under 35 U.S.C. § 103(a) as unpatentable over Morich in view of MathWorld.

Reconsideration is respectfully requested.

Since Morich fails to teach calculation of eddy currents outside of the outer coil and MathWorld contains no suggestion to do so, it is respectfully urged that this rejection be withdrawn.

In view of the foregoing amendments and remarks, it is urged this case is now in condition for allowance.

Respectfully submitted,

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